

## REMARKS/ARGUMENT

Claims 1-29 are currently pending in the present application.

Applicants would like to thank the Examiner for considering the reference submitted with the Information Disclosure Statement filed on March 10, 2000, and for providing Applicants with an initialed copy of the PTO-1449 form.

Otherwise, Applicants respectfully traverse all claim rejections for the reasons that follow:

### I. REJECTIONS OF CLAIMS 1-29 UNDER 35 U.S.C. § 102(b)

Claims 1-29 were rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,178,130 to Kaiya (hereinafter "Kaiya"). Respectfully, Applicants traverse.

Claim 1 relates to an endoscopic imaging system comprising, inter alia, ". . . a timing signal generation circuit, incorporated in [an] imaging apparatus, for generating timing signals used to drive [an] imaging device; and a phase adjustment circuit for adjusting the phases of the timing signals so as to compensate a signal delay occurring over a signal transmission line to said imaging device which is linked and over which a signal is transmitted."

Kaiya relates to a parent-son type endoscope, in which a secondary endoscope is synchronized with a primary endoscope. (Kaiya, Abstract). As characterized, the parent-and-son type endoscope system 1 of the first embodiment comprises a parent video scope 2a, a son video scope 2b, light source apparatuses 3a and 3b connected respectively to the parent and son video scopes 2a and 2b, camera controllers 4a and 4b to process signals for respective imaging means of the parent and side video scopes 2a and 2b, and monitors 5a and 5b connected to camera controllers 4a and 4b to display endoscope images. The parent camera controller 3a includes a synchronizing circuit 33a which, in conjunction with a son synchronizing circuit 34, generates synchronizing signals to synchronize the timing of the R, G, B sequential lights and to synchronize the SID driving system and signal processing systems. (Kaiya, col. 5, lines 29-38). The main synchronizing circuit 33a includes an oscillator 77 connected to a timing generator 78, which is provided solely as "a **frequency dividing** circuit or the like." (Kaiya, col. 5, lines 62-63). The timing generator 78 performs **a frequency division** of oscillator 77 to produce a vertical synchronizing signal S1 to display the endoscopic images. (Kaiya, col. 5, lines 63-65). Signal S1 is then fed into a **second frequency dividing circuit** 79, which **divides** the frequency of S1 by three to produce synchronizing

signal S2. (Kaiya, col. 6, lines 12-15). The S2 signal is then used to properly synchronize light source apparatuses 3a and 3b so that a target object to be imaged is properly illuminated at the correct time. For this purpose, signal S2 is fed into a phase-locked loop (PLL) circuit 82 to control the rotation of a color filter motor 22a, 22b, so that "the rotating **speed and the phase of motor 22a[, 22b]** are controlled . . . to keep the phase of the [color filter motor 22a, 22b] coinciding with the phase of the second synchronizing signal S2." (Kaiya, col. 6, lines 38-52).

To reject a claim based on anticipation, a single prior art reference must identically disclose each and every limitation of the claim. See Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628 631 (Fed. Cir. 1987). In accordance with this standard, it is respectfully submitted that Kaiya does not disclose "a phase adjustment circuit **for adjusting the phases of the timing signals so as to compensate a signal delay occurring over a signal transmission line** to said imaging device which is linked and over which a signal is transmitted," as recited in claim 1.

As described above, the synchronizing circuit of Kaiya is provided solely as a **frequency dividing circuit** (not a phase adjustment circuit) to synchronize various components of the parent-and-son type endoscope system. Specifically, a timing generator 78 of circuit 33a performs **a frequency division** of oscillator 77 to produce signal S1, which is then fed into a **second frequency dividing circuit** 79, which **divides** the frequency of S1 by three to produce synchronizing signal S2. In this manner, it is clear that the synchronizing circuit 33a of Kaiya does not perform any phase adjustment function whatsoever, but rather merely divides a main oscillator clock 77 into S1 and S2 signals having lower frequencies, S1 and S2 being produced without a phase offset. This is further evidenced by the timing diagram of Figure 5, which shows synchronization signals S1, S2 in phase alignment with the oscillator clock signal 77. (Kaiya, Figure 5). As such Kaiya simply does not disclose any mechanism "for adjusting the phases of the timing signals so as to compensate a signal delay occurring over a signal transmission line," as recited in claim 1.

The Office Action disagrees and asserts that the PLL circuit 82 performs such a function. (Office Action, page 3). Specifically, with respect to the double patenting rejections, the Office Action asserts that "one of ordinary skill in the art can clearly acknowledge that Kaiya's 'synchronizing of the illumination periods' is basically the same as the Applicants' 'adjusting the phases of the timing signals' because they both compensate for signal delays." (Office Action, page 5). In this regard, Applicants recognize that the PLL circuit 82 is provided to adjust phase. **However, the adjusted phase has absolutely nothing to do with compensating for "a signal**

delay occurring over a signal transmission line," as recited in claim 1. As described above, the PLL circuit 82 is provided only to properly synchronize light source apparatuses 3a and 3b so that a target object to be imaged is properly illuminated at the correct time. For this purpose, signal S2 is fed into a phase-locked loop (PLL) circuit 82 to control the rotation of a color filter motor 22a, 22b, so that "the rotating speed and the phase of motor 22a, 22b are controlled . . . to keep the phase of the [color filter motor 22a, 22b] coinciding with the phase of the second synchronizing signal S2." If Kaiya did not properly phase-lock the motor 22a, 22b, the motor would spin freely on its own and would inevitably drift out of sync with the rest of parent-and-son type endoscope system 1. Thus, Kaiya adjusts motor 22a, 22b to prevent synchronization drift, not to compensate for signal delays occurring over a signal transmission line.

For at least the foregoing reasons, it is respectfully submitted that claim 1 is allowable over Kaiya. Furthermore, since claims 2-17 ultimately depend from claim 1, since claims 18, 22, and 26 also recite "phase adjustment circuit(s) for adjusting the phases of the timing signals so as to compensate a signal delay occurring over a (first and second) signal transmission line(s)," since claims 19-21 ultimately depend from claim 18, since claims 23-25 ultimately depend from claim 22, and since claims 27-29 ultimately depend from claim 26, it is respectfully submitted that these claims are allowable over Kaiya for at least the same reasons. Accordingly, it is kindly requested that the rejections of claims 1-29 under 35 U.S.C. § 102(b) be withdrawn.

## **II. DOUBLE PATENTING REJECTIONS OF CLAIMS 1, 18, 22, AND 26**

Claims 1, 18, 22, and 26 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of Kaiya. Respectfully, Applicants traverse.

As described above, each of claims 1, 18, 22, and 26 recites "phase adjustment circuit(s) for adjusting the phases of the timing signals so as to compensate a signal delay occurring over a (first and second) signal transmission line(s)." Nowhere in claim 1 of Kaiya does a similar feature exist, nor is such a feature obvious over claim 1 of Kaiya.

The Office Action disagrees and asserts that Applicants' phase adjustment circuit(s) are obvious over Kaiya's PLL, which synchronizes illumination periods of a color wheel. However, as described above, the synchronization of illumination periods has absolutely nothing to do with compensating for "a signal delay occurring over a signal transmission line," as recited in claims 1,

18, 22, and 26. The PLL circuit of Kaiya operates so that "the rotating speed and the phase of motor 22a[, 22b] are controlled . . . to keep the phase of the [color filter motor 22a, 22b] coinciding with the phase of the second synchronizing signal S2." If Kaiya did not perform this function, the motor 22a, 22b would spin freely on its own and would inevitably drift out of sync with the rest of parent-and-son type endoscope system 1. Thus, Kaiya adjusts motor 22a, 22b to prevent synchronization drift, not to compensate for signal delays occurring over a signal transmission line.

For at least the foregoing reasons, it is respectfully submitted that claims 1, 18, 22, and 26 are not obvious over claim 1 of Kaiya. Accordingly, it is kindly requested that the rejections of these claims under the judicially created doctrine of obviousness-type double patenting be withdrawn.

### III. CONCLUSION

In view of the foregoing, it is respectfully submitted that all pending claims are currently in allowable condition. Accordingly, reconsideration and prompt allowance of all pending claims is therefore earnestly solicited.

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Max Moskowitz

Name of applicant, assignee or  
Registered Representative

Signature

September 25, 2003

Date of Signature

Respectfully submitted,

Max Moskowitz

Registration No.: 30,576

OSTROLENK, FABER, GERB & SOFFEN, LLP

1180 Avenue of the Americas

New York, New York 10036-8403

Telephone: (212) 382-0700

MM:BND